HELPFUL HINTS for the MCA test in MATH

**ALGEBRA**

1. Simplifying Expressions – use the distributive property (Watch out for subtraction!)

4(x – 2y) – (3x – 5y) = 4x – 8y – 3x + 5y = 1x – 3y

2. Adding Terms – add LIKE terms (x’s to x’s, y’s to y’s, etc. – leave exponents alone)

4x + 3 – 8y + 7x – 8 + 4y = 11x – 4y – 5

3. Multiplying Terms – add exponents on variables

(3m2n3)(–2mn4) = –6m3n7

4. Solving Equations in One Variable – get x by itself on one side

PLUG ANSWERS INTO ORIGINAL EQUATION!!

5. Solving Quadratic (x2) Equations – graph, factor, or quadratic formula

PLUG ANSWERS INTO ORIGINAL EQUATION!!

6. Solving Systems of Equations – substitute or eliminate

y = 3x 3x – y = 0

y = 2x – 4 –2x + y = –4

substitute 3x = 2x – 4 add them 1x = –4

solve x = –4 substitute 3(–4) – y = 0

plug in y = 3(–4) = –12 –12 – y = 0

y = –12

PLUG ANSWERS INTO ORIGINAL EQUATIONS!!

7. Equations of Lines

y= mx + b m = slope; b = y-intercept 

Parallel lines have same slope

Perpendicular lines have slopes that are negative reciprocals

8. Exponential Growth & Decay – repeated multiplication

 *a* is the y-intercept

If b is > 1, GROWTH

If b < 1, DECAY

NUMBER SENSE

**1. Calculator Use**

1. Fractions – does your calculator have a fraction key? If not, MATH-FRAC
2. Negative Numbers – use parentheses as needed
3. Roots – where is the square root or cube root key?
4. Powers – squared, cubed, 4th power, etc. – can you key in?

**2. Order of Operations**

1. **PEMDAS** – **P**arentheses, **E**xponents, **M**ultiplication/**D**ivision, **A**ddition/**S**ubtraction (from left-to-right each step)
2. Graphing calculator can handle the order; some scientific calculators cannot

**3. Applications of Decimals and Fractions**

1. **Read each problem *carefully***
2. Break down the information
3. Watch out for different units in problem! (minutes vs. hours)
4. Eliminate answers that don’t look right at all

**4. Percent Problems**

# IS / OF = % / 100

1. **Percent change = (amount of change) / (*original* amount)**

**5. Rate, Ratio & Proportion** **(fraction = fraction; cross-multiply to solve)**

1. *Keep the matching units in the same parts of the fractions*

For example, either  =  or  = 

1. Map Scales (inch / mile) = (inch / mile)
2. Similar Figures (match corresponding sides in proportion)
3. Unit Pricing (cost per item)

DATA, STATISTICS & PROBABILITY

**1. Central Tendency & Variability**

1. Mean – add numbers up and divide by how many there are
2. Median – put numbers in order and find the one in the middle
3. Mode – number that occurs most often
4. Range – max value minus min value
5. IQR – range of middle 50% of data (length of box)

**2. Line of Best Fit** – plot the points in a scatter plot; use best fit line to predict

**3. Interpreting Graphs**

A. Scatter Plot – plot points without connecting – use best fit line

B. Line Plot – continuous plot over time – connect each point

C. Bar Graph – words on x-axis; height of bar tells how many in category

D. Histogram – range of numbers on x-axis; height of bar tells how many in each range

E. Circle Graph – pieces of pie shown by percentage of 360 degrees

F. Stem and Leaf Plot – arrange numbers in order, stacked in bars

G. Box and Whisker Plot – shows range of each 25% of data items

**4. Probability**

1. Sample Space – count the total possibilities
2. Computing Probabilities – always a fraction between 0 and 1

C. Permutations & Combinations – order matters for a permutation

D. Independent vs. Dependent Events – does one affect the choices for next?

1. Trees – show all possibilities
2. Union & Intersection – union is OR; intersection is AND
3. Binomial Models – success or failure – what are probabilities of each?
4. Area Probability – find area of smaller region; divide by area of total

Online Practice

MCA Sampler: Pdf with answers Pioneer Press Sample Questions Pioneer Press Answers Really good slides









QUIZLET flash card review Texas Sample Test



